

Remarks

In the Office action mailed January 6, 2006, claims 11-18 were rejected. Claims 11-14 and 17 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Pat. No. 5,512,785 ("Haver et al."). Claims 15-16 and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Haver et al. in view of U.S. Pat. No. 5,026,663 ("Zdebel et al."). Each of these rejections will be discussed below.

Claim Amendments

Claim 11 has been amended to clarify the claim. Specifically, the claim now recites "filling said slot region with said polycrystalline semiconductor plug material such that a polycrystalline semiconductor plug formed with said polycrystalline semiconductor plug material is contiguous with each sidewall of said slot region." Amended claim 1. As noted above, the amendment is supported by the originally-filed application, for instance, at p. 9, ln. 33-35 ("conformally deposited poly plug layer 801 fill[s] the poly plug slot 701 with a doped polycrystalline silicon") of the application and accompanying Fig. 8. If the polycrystalline semiconductor plug material fills the slot region, the plug material would be contiguous with each sidewall of the slot region.

§ 102(b)

Applicant asserts none of the claims is anticipated. In order to anticipate a claim, a reference must teach all the elements of a claim. See Verdegaal Bros., Inc. v. Union Oil Co., 814 F.2d 628, 631 (Fed. Cir. 1987). In addition, the reference must show the claimed invention "in as complete detail as is contained in the patent claim" in order to anticipate the claimed invention. Richardson v. Suzuki Motor Co., Ltd., 868 F.2d 1226, 1236 (Fed. Cir. 1989). Applicant

contends that Haver et al. does not teach all the elements of Applicant's claims, in as complete detail as in Applicant's claim, and therefore the claims are not anticipated.

*Claim 11*

Haver et al. fails to teach Applicant's claimed element "filling said slot region with said polycrystalline semiconductor plug material such that a polycrystalline semiconductor plug formed with said polycrystalline semiconductor plug material is contiguous with each sidewall of said slot region." Amended claim 11. Haver et al. teaches the deposition of a blanket polysilicon layer, which is used to form base contact plugs. See Haver et al., col. 3, ln. 12-20; see Fig. 6. Unlike Applicant, Haver et al. teaches the formation of at least two plugs; none of these plugs can be contiguous with each sidewall of said slot region since one plug will prevent another plug from being contiguous with at least one of the sidewalls. Therefore, Haver et al. does not teach Applicant's claimed element "filling said slot region with said polycrystalline semiconductor plug material such that a polycrystalline semiconductor plug formed with said polycrystalline semiconductor plug material is contiguous with each sidewall of said slot region." Amended claim 11 (emphasis added). Since Haver et al. fails to teach, and in fact teaches away from, this element of Applicant's claim, this claim is novel. Applicant requests a withdrawal of this rejection.

*Claim 12*

Haver et al. fails to teach Applicant's claimed element "wherein said redistributing results in a doping concentration toroidal-like in topology." Claim 12. Therefore, this claim is novel.

Haver et al. does not teach a doping concentration toroidal-like in topology. As noted above, Haver et al.

teaches at least two plugs, rather than Applicant's plug which is contiguous with each sidewall of the slot region. See Haver et al., col. 3, ln. 12-20; see Fig. 6. Since Haver et al. teaches two plugs, resulting in two doping regions, neither of which is toroidal-like in topology, Haver et al. cannot teach, and in fact teaches away from, a doping concentration which is toroidal-like in topology. Therefore, Haver et al. does not anticipate Applicant's claim 12.

Further, claim 12 is a dependent claim of independent claim 11. Applicant has shown above that claim 11 is novel. Therefore, dependent claim 12 is also novel for at least the same reasons as claim 11. Applicant requests a withdrawal of this rejection.

*Claims 13-14, 17*

Claims 13-14 and 17 are dependent claims of independent claim 11. Applicant has shown above that claim 11 is novel. Therefore, dependent claims 13-14 and 17 are also novel for at least the same reasons as claim 11. Applicant requests a withdrawal of this rejection.

§ 103(a)

Applicant asserts none of the claims are obvious. In order to make a showing of obviousness, a reference or references must teach all the limitations of a claim. See MPEP § 2143. In order to make a showing of obviousness, a reference or references must teach all the limitations of a claim and there must be some suggestion or motivation in either the references or the knowledge generally available to one of skill in the art to modify the reference or combine reference teachings. See MPEP § 2143. These requirements for a showing of obviousness have not been met and therefore the claims are not obvious.

Haver et al. fails to teach all the limitations of Applicant's claim 11 and in fact, Haver et al.'s teaching of at least two spacers teaches away from Applicant's claimed limitation of a plug contiguous with each sidewall of the slot region. Zdebel et al. also fails to teach this limitation. There is no suggestion or motivation in Haver et al. or the knowledge generally available to one of skill in the art, to modify Haver et al. to teach Applicant's claimed limitation of "filling said slot region with said polycrystalline semiconductor plug material such that a polycrystalline semiconductor plug formed with said polycrystalline semiconductor plug material is contiguous with each sidewall of said slot region." Amended claim 11. Therefore, claim 11 is not obvious.

*Claims 15-16 and 18*

Claims 15-16 and 18 are dependent claims of independent claim 11. Applicant has shown above that claim 11 is novel and that Haver et al. teaches away from Applicant's claimed limitation "filling said slot region with said polycrystalline semiconductor plug material such that a polycrystalline semiconductor plug formed with said polycrystalline semiconductor plug material is contiguous with each sidewall of said slot region." Amended claim 11. Zdebel et al., cited against Applicant's claims 15-16 and 18 in combination with Haver et al., also fails to provide either the teaching or suggestion to modify Haver et al. to produce Applicant's claim 11's limitation "filling said slot region with said polycrystalline semiconductor plug material such that a polycrystalline semiconductor plug formed with said polycrystalline semiconductor plug material is contiguous with each sidewall of said slot region." Id. Since Haver et al. and Zdebel et al., alone or in combination, fail to teach or suggest all the limitations of Applicant's claim 11, claim 11 is non-obvious. Dependent claims 15-16 and 18 of non-obvious

claim 11 are also non-obvious for at least the same reasons as claim 11. Applicant therefore requests a withdrawal of this rejection.

Conclusion

Applicant has amended claim 11. Applicant has further shown that claims 11-18 are novel and non-obvious. Applicant therefore requests a Notice of Allowance. Please contact the Applicant's attorney at 408/297-9733 between 9:00 a.m. - 5:00 p.m. (PST) if there are any questions.

CERTIFICATE OF MAILING

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Respectfully submitted,



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